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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/733,857	12/08/2000	Robin R. Miles	IL-10632	2019

24981 7590 12/11/2003

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA
LAWRENCE LIVERMORE NATIONAL LABORATORY
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EXAMINER

NOGUEROLA, ALEXANDER STEPHAN

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/733,857	MILES ET AL.	
	Examiner	Art Unit	
	ALEX NOGUEROLA	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed October 08, 2003 have been fully considered but they are not persuasive. Applicant alleges that the rejections of claims 1-6 as being obvious over McBride et al. in view of Becker et al. and Bakewell et al. fail the three requirements to establish a prima facie case of obviousness. The Examiner respectfully disagrees.

As for the requirement that the prior art references teach or suggest all the claim limitations, Applicant states,

Three references, McBride et al., Becker et al., or Bakewell et al., fail to show the combination of structural elements of the claims forming an apparatus that provides dielectrophoretic concentration of particles under electrokinetic flow and collecting said particles in a microfluidic channel using a combination of dielectrophoresis and electrokinetic/electroosmotic flow. *Page 9 of the amendment.*

As discussed in the rejections of claims 1-6 as being obvious over McBride et al. in view of Becker et al. and Bakewell et al., McBride et al. provides electrodes **16A** and **16B** (in Figure 4) to create a DC electric field so as to cause electrokinetic/electroosmotic flow and electrodes **1** to create a varying AC field so as to cause a traveling wave pattern of voltages. See column 3, lines 47-55 and column 7, lines 11-25. Bakewell et al. and Becker et al. are only cited for their teaching of using interdigitated electrodes in a microfluidic channel with a varying AC field for dielectrophoresis (abstract and Figures 1A and 1B in Becker et al. and abstract and Figure 1 in Bakewell et al.), such as traveling wave dielectrophoresis (column 7, lines 22 in

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Becker et al.). Thus, the combination of McBride et al., Becker et al., and Bakewell et al. does teach the claimed structural elements.

Furthermore, Applicant appears to believe that one of McBride et al., Bakewell et al., or Becker et al. must individually teach all of the claimed limitations. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

As for the requirement of reasonable expectation of success for the hypothetical combination, as discussed in the rejection, it should be first noted that Applicant has not stated any reason why success would not be expected. McBride et al. teach a microfluidic channel having a series of electrodes or subsets of alternating electrodes to which an AC field is applied in a programmed phase sequence so as to control movement of biochemical particles of interest, such as nucleic acids (Figures 4 and 10; and column 7, lines 11-25 and column 2, lines 65-67). Bakewell et al. and Becker et al. teach a microfluidic channel having interdigitated electrodes to which an AC field is applied so as to control movement of particles of interest, such as nucleic acids (in Bakewell et al. see the abstract and Figure 1 and in Becker et al. see the abstract; Figures 1A and 1B; and column 7, lines 22-53). Because Bakewell et al. and Becker et al. disclose using electrodes with an AC field in a microfluidic channel, as does McBride et al., to control movement of nucleic acids, as does McBride et al., contrary to Applicant's assertion, one with ordinary skill in the art would expect success with the substitution of the electrodes of Bakewell et al. or Becker et al. in the invention of McBride et al.

Finally, as for a suggestion or motivation for substituting the electrodes of Bakewell et al. or Becker et al. in the invention of McBride et al., as stated in the rejections, the motivation for doing so is to optimize the apparatus or method for the analyte of interest. Becker et al. for example, discuss how to optimize the structure, arrangement, and use of the electrodes (column 14, line 50 – column 15, line 10) to control movement of analytes of interest.

Thus, for the reasons set forth above, the requirements for a prima facie case of obviousness have been met.

Status of the Rejections pending since the Office action of August 07, 2003

2. The rejections of claims 1-6 under 35 U.S.C. §103(a) rejections as being obvious over McBride et al. (US 6,296,752 B1), Becker et al. (US 6,287,832 B1), and Bakewell et al. ("Characterization of the dielectrophoretic movement of DNA in micro-fabricated structures") are maintained.

Final Rejection

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEX NOGUEROLA whose telephone number is (703) 305-5686. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, NAM NGUYEN can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Alex Noguera

12/06/03

Primary Examiner

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